Syllables, Tone, and Verb Paradigms

Studies in Chinantec Languages 4

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Studies in Chinantec Languages 4

William R. Merrifield and Calvin R. Rensch
Editors

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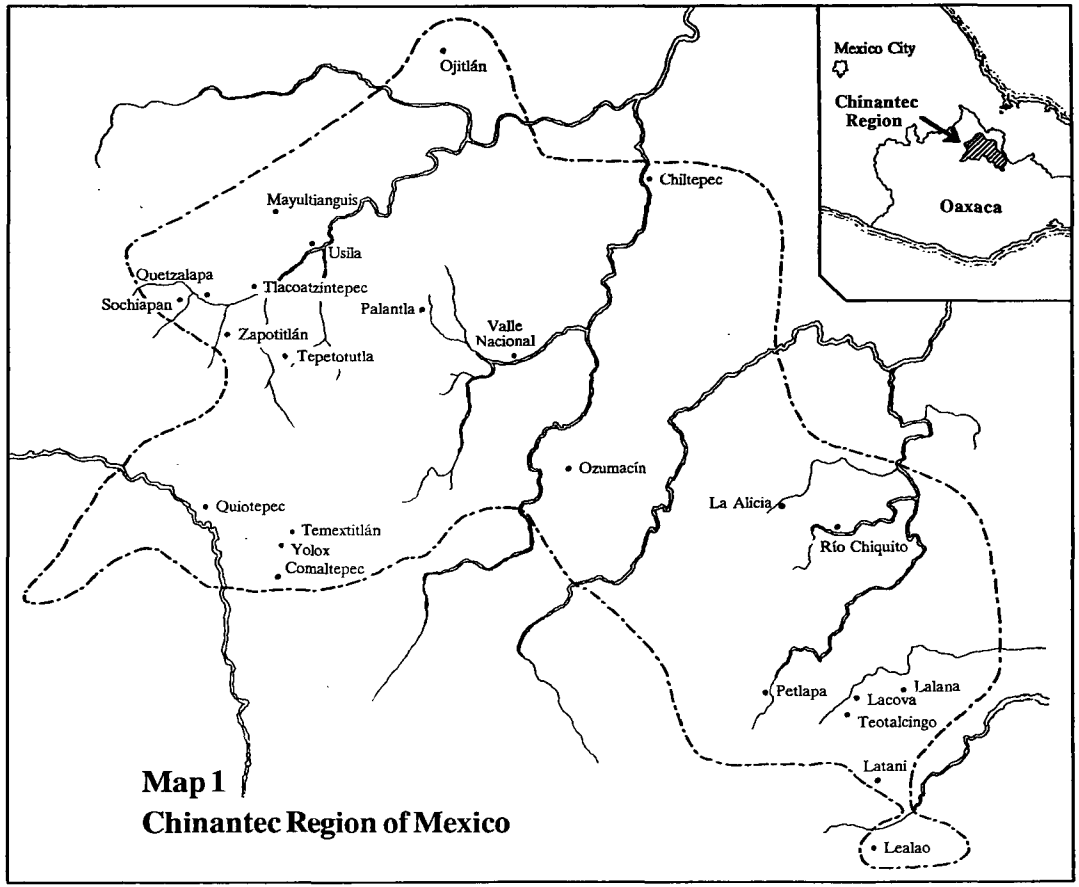


Map 1
Chinantec Region of Mexico

The Lealao Chinantec Syllable

James E. Rupp

Stress, length, nasalization, and tone are prominent features of the Lealao Chinantec syllable, as is true of other Chinantec languages.[1] The syllable is a constituent of the phonological word, a unit constituted of syllables of which only one is stressed.

1. Word and syllable

The phonological word is typically just one stressed syllable, although a verb may be realized phonologically as a string of as many as six syllables. The stressed syllable is the last syllable of the word unless the word ends with one of five unstressed person markers. *ma^{M}hmé:i^{L}* 'I did it', *mï^{H}mï^{M}-ʔi^{L}zia^{L}giá:^{L}aʔ^{VH}* 'when we will just about arrive'.[2]

There are two kinds of stress, ballistic and controlled. A ballistic syllable (marked by an acute accent /´/ over the nuclear vowel of the syllable) is

[1]These data were collected during extended periods of residence from 1968 to the 1980s in San Juan Lealao, located about 40 miles northeast of Oaxaca City, Oaxaca, Mexico. In two other nearby towns, Latani and Santa María Yahuivé, there are additional speakers of this language, but at least eighty percent of them reside in Lealao. This analysis was made with the help of Hipólito Pacheco Martínez, Máximo Alonzo Marcial, and Arturo Cruz Pérez, all native speakers of Lealao Chinantec. Calvin R. Rensch, who had learned and analyzed another Chinantec language, directed the early investigation, facilitating the solving of preliminary problems of analysis. He and William R. Merrifield gave valuable suggestions concerning the form of this presentation.

[2]Tone symbolization here is the same as throughout this volume: high /^{H}/, mid /^{M}/, low /^{L}/, and very high /^{VH}/.

shorter than a controlled one (correspondingly marked by a grave accent /ˋ/), and is characterized by a rapid decrease in loudness and lowering in pitch. *guá:*^{M} 'ravine', *guà:*^{M} 'hand', *ŋiú*^{H} 'house', *ŋiù*^{H} 'his house'.

A syllable consists of an optional prenuclear syllable margin, a nucleus, an optional postnuclear syllable margin, and tone. The prenuclear margin may consist of a single consonant, a consonant which is preaspirated, palatalized, or both, or a labialized consonant. Examples follow, but a fuller discussion of details is given below. *lí*^{VH} 'flower', *hlì̈*^{H} 'bench', *lià:*^{M} 'powder', *hliù:iʔ*^{M} 'node', *guáʔ*^{VH} 'molar'.

The syllable nucleus is a vowel to which length or nasalization, or both, may be added. *hú*^{VH} 'mosquito', *ì:*^{M} 'extinguish it!', *kạ̀*^{H} 'dough', *kạ́:*^{VH} 'rock'. Either the units /i ʔ/ or the sequence /iʔ/ may occur in the postnuclear margin. *guàʔ*^{M} 'church', *sụ́i*^{H} 'smooth', *ʔẹ́:iʔ*^{M} 'inside'. A single tone or a sequence of two tones occurs on every syllable. *dià*^{H} 'father', *ŋìì:*^{LH} 'salty'.

Apart from lack of stress, unstressed syllables differ from stressed syllables only in their relative simplicity. Specifically, consonant clusters (either prenuclear or postnuclear), length, nasalization, and tone sequences are not found in unstressed syllables. *ia*^{H}*ạ́:i*^{L} 'I went to bed', *gạ̀:*^{LM}*a*^{H} 'we are immoral'.

With this brief overview of Lealao syllable structure, the remainder of this paper addresses details of the prenuclear syllable margin (§2), the syllable nucleus (§3), the postnuclear margin (§4), and tone (§5).

2. The prenuclear syllable margin

2.1. Simple margins. The prenuclear syllable margin may be simple or complex. A simple margin consists of any one of the following: voiceless stops /p t k ʔ/, voiced stops /b d z g/ of which /z/ is phonetically an affricate [dz], voiceless fricatives /f s h/, voiced fricative /v/, nasals /m n ŋ/ and approximants /l r/. The stops /p b d/ occur infrequently. The fricatives /f v/ are labiodentals. *pìʔ*^{H} 'little', *tà*^{M} 'ladder', *kù:*^{H} 'money', *ʔú*^{M} 'glass', *bò*^{M} 'turtledove', *dị̀*^{M} 'top', *zì̈:*^{M} [dzì̈:^{M}] 'dog', *gạ̀:*^{LM}*a*^{H} 'we are immoral', *fì*^{VH} 'road', *sà:*^{H} 'incline', *hè:*^{M} 'spider', *vó*^{L} 'land', *mè:*^{H} 'flea', *nì*^{M} 'three', *ŋú*^{H} 'meat', *lí*^{VH} 'flower', *rá:*^{M} 'sweet'.

These seventeen simple onsets may be arranged as in (1) to highlight both symmetry and dissymmetry in the consonantal system of Lealao.

(1)	p	t		k	ʔ
	b	d	z	g	
	f	s			h
	v				
	m	n		ŋ	
		l			
		r			

Rensch 1989 and 1990 provide an explanation for the two major dissymmetries in this configuration, relating to /z/ and /v/. Specifically, the source of Lealao /v/ is **(ʔ)w*, which configures with **hw* as the source of Lealao /f/; whereas the sources of Lealao /s z/ are the pair **s* and **z*, respectively, with certain contemporary Chinantec languages showing affricate [tš] as the result of **s*, paralleling [dž] as the result of **z*.

Subsets of these simple onsets occur in more complex arrangements of three types—palatalized, labialized, or preaspirated—opening the door to alternate phonemicizations. Preaspiration is addressed first.

2.2. Preaspiration. The laryngeal consonants /ʔ h/ were introduced above as two of the thirteen consonants which may form simple, prenuclear syllable onsets. In proto-Chinantec and most contemporary Chinantec languages (Rensch 1989), these two consonants may each occur alone in simple syllable onsets or as the first of two or more consonants in complex syllable onsets. As Rensch 1990 points out, Lealao has lost /ʔ/ in all complex onsets, retaining it only as a simple onset (or as postnuclear in a checked syllable such as *iáʔ*^{H} 'broom'). It has also lost /h/ from the sequences **hw*, but it has retained it in clusters with the three nasal consonants /m n ŋ/, the lateral approximant /l/, and the palatal element /i/ (the source of which Rensch labels as **y*).

In the context of a following nasal or approximant, /h/ is the voiceless counterpart of the segment it precedes. *hmà:*^{M} [Mmà:^{M}] 'straw mat', *hní*^{VH} [Nnį́^{VH}] 'splinter', *na*^{L}*hŋí*^{VH} [nąᴸNŋį́^{VH}] 'clean', and *hlì*^{H} [hl̥ì^{H}] 'bench'. When /h/ precedes the palatal element /i/, it is fronted to [š]. *hiáʔ*^{M} [šiáʔ^{M}] 'toward'.

2.3. Palatalization. There is a palatal element in Lealao Chinantec (as in all of the Chinantec languages) which occurs preceding the nuclear vowel of the syllable and which is here presented as the final element of certain complex syllable onsets. This element is here transcribed as /i/, although in other discussions of Chinantec it is written as /y/. As mentioned

immediately above, its proto-Chinantec source is considered to be **y* in Rensch 1989 and 1990.

This palatal element may occur preceding a syllable nucleus as the sole member of a syllable onset, as in *iáʔ*^{H} 'broom'. It may also follow any of the simple consonants /t k d z g s h n ŋ l/ or the preaspirated sequences /hn hŋ hl/, which is to say, it may follow any consonant other than a labial consonant, /r/, or /ʔ/.

There is a range of phonetic realizations of this palatal element, depending upon its specific context. Following /t d l n/, for example, its phonetic influence on a preceding consonant or following vowel is minimal, its primary realization being a vocalic transition between the two which is here represented as [i]. *tià:*^{M} [tià:^{M}] 'white', *dià*^{H} [dià^{H}] 'father', *lià:*^{M} [lià:^{M}] 'powder', *hliù:iʔ*^{M} [Lliù:iʔ^{M}] 'node', *niù*^{M} [niu̱^{M}] 'you (sg)'.

Following velars /k g/ and laryngeal /h/, although there is a similar vocalic transition, the consonant which precedes the palatal element is itself also fronted to palatal position. *kiàʔ*^{M} [tš^{H}iàʔ^{M}] 'chachalaca (Ortalis vetula)', *giá:*^{L} [džiá:^{L}] 'seven,' *hiàʔ*^{H} [šiàʔ^{H}] 'where?'.

Finally, following /z s ŋ/, the realization of the palatal element is carried primarily by palatalization of the preceding consonant without any significant vocalic transition to the nuclear vowel. *zíí:*^{H} [dźí:^{H}] 'vapor', *sià*^{M} [šà^{M}] 'exists', *ŋiú*^{L} [ñú̱^{L}] 'nine'.

There is clear contrast between the simple palatalized onsets /ni ŋi/ as illustrated in *niù*^{M} [niu̱^{M}] 'you (sg)' and *ŋiú*^{L} [ñú̱^{L}] 'nine'; but when a nasal is preaspirated, contrast before prenuclear /i/ is lost. In the single word with /i/ as nuclear vowel there is free variation between *hní:*^{M} and *hŋí:*^{M}, meaning 'cloud'. When /i/ is prenuclear, the palatalized nasal is always [ñ] and interpreted as /ŋi/, as in *hŋiá*^{M} [Ññą́^{M}] 'I' and *hŋiá*^{L} [Ññą́^{L}] 'eight'.

In this description of palatalization, the assumption is made that simple consonants occur alone or with a following palatal element. It might alternatively be decided that Lealao has a larger inventory of consonants which include both palatal and nonpalatal pairs. The sequence /ti/, for example, would then be interpreted as /t^{y}/. A number of alternatives of this type are listed in (2).

(2) *tiV* could be interpreted as t^yV
kiV could be interpreted as k^yV
diV could be interpreted as d^yV
ziV could be interpreted as z^yV (or as *j*)
giV could be interpreted as g^yV
siV could be interpreted as s^yV (or as *š*)
hiV could be interpreted as h^yV
niV could be interpreted as n^yV (or as *ñ*)
ŋiV could be interpreted as $ŋ^yV$
liV could be interpreted as l^yV

2.4. Labialization. Velar consonants /k g/ (but not /ŋ/) may also occur followed by a labial element, here indicated as /u/ (but also in the literature as /w/), as a part of the syllable onset. *kuï̀:*^{M} 'maize', *guáʔ*^{VH} 'molar'.

As in the case of palatalization, these sequences could be treated as units /k^w g^w/. Alternatively, in view the known history of Chinantec phonology, Lealao /f v/ could be treated as the palatal sequences /hu u/, respectively; but there seems to be little motivation for this in the treatment of contemporary Lealao Chinantec.

When onsets /ku gu/ are followed by the low front nuclear vowel /e/, unrounding of the lips precedes tongue lowering with the result that a high unrounded segment intervenes between the consonantal margin and the vocalic nucleus, as in *kue*^{H} [kuïe^H] 'horse'.

3. The syllable nucleus

There are six vowels—the intersection of high versus nonhigh, back versus nonback, with back vowels being rounded or nonrounded, as in (3).

(3) i ï u
e a o

High vowels are tense, except that /ï/ has a lax fronted allophone [ɪ] after /d/ (a rare consonant); /ï/ has limited distribution after palatal onsets, occurring only following /si zi/.

Front vowels do not follow /k g ŋ/ except as complex onsets with intervening palatal /i/, which is to say, when a velar consonant precedes a nuclear front vowel, palatalization is invariably present and is, therefore, nondistinctive in this context in a strictly phonological sense. Since palatalization frequently occurs to express certain morphological categories, however, there are clear cases where the presence of palatalization in such

a context is morphologically significant. For example, the inanimate numeral 'five' is *ŋiáᴹ*. This form appears to be morphologically simple, so that the palatal element is here part of the underlying form of the morpheme. When the animate marker *-i* is postposed to the inanimate form of the numeral, the numeral becomes *ŋiéiᴹ*. Although the sequence /ŋe/ would invariably be [ŋi̯e̯], with an intrusive palatal transition between the consonant and the nuclear vowel, the inanimate form of the numeral shows that the palatal element is not, in this case, the result of a phonological rule. There is no reason to suppose, on the other hand, that the noun *ŋìᴹ* [ŋi̯i̯ᴹ] 'thread' has any such palatal element in its underlying form. The intrusion of [i], in this case, would appear to be the result of a phonetic rule.

High back /u/ does not follow the complex onsets /ku gu/. Low back /o/ occurs infrequently and only after labials /p b f v m/ or laryngeals /h ʔ/. Examples of a variety of nuclear vowels follow: *ŋiiᴹ* 'thread', *kuı̯:ᴹ* 'run!', *hı̯:ᴹ* 'year', *ŋiéᴸ* 'neither', *kwè:ᴹ* 'long', *hè:ᴹ* 'spider', *kwı̀:ᴹ* 'maize', *hı̀:ᴸ* 'all', *šı̀:ʔᴴ* 'tell him!', *ziı́:ᴴ* 'vapor', *ŋiáᴹ* 'five (inan)', *kuà:ᴹ* 'nettle', *hà:ᴹ* 'cotton', *ŋiùᴹ* 'catfish', *hù:ᴹ* 'dove', *kuò:ᴹ* 'give it to him!', *hó:ᴸ* 'but', *ʔóᴴ* 'tortilla'.

In a stressed syllable, any of the vowels may occur with length. *tà:ᴹ* 'banana', *tàᴹ* 'ladder', *ŋiì:ᴸᴴ* 'salty', *ŋiiᴸᴴ* 'wake up!'.

Nasalization of the nuclear vowel may also occur in stressed syllables. While not uncommon following voiceless consonants, nasalization is only infrequently found following the voiced consonants /d z g v l r/. *dı̨ᴹ* 'top', *naᴹguı̨̀:iᴹ* 'he is asleep', *vı̨́:ⱽᴴ* 'oven', *lı̨ᴹ* 'able', *rè:iᴸᴴ* 'pull it up!', *iú:ᴹ* 'red', *tą̀ᴹ* 'bird', *ʔiᴸhą́ᴸ* 'it will boil'.

Nasalization of vowels is neutralized following nasal consonants /m n ŋ/. Any such vowel is phonetically nasal, as is any unstressed vowel following a stressed nasalized vowel. *ŋiiᴹ* [ñi̯ᴹ] thread', *ʔiᴴguı̨́:ⱽᴴaᴴ* [ʔiᴹguı̨̀:ⱽᴴą̀ᴹ] 'I will get down'.

4. The postnuclear margin

As mentioned above, /i ʔ i?/ may occur following the nuclear vowel of a syllable. Such elements are here referred to as elements of the postnuclear margin, but this is for convenience of description only; these elements are phonologically very closely bound to the syllable nucleus. Grammatically, postnuclear /i/ usually marks first- or second-person singular or animate reference. *tì:iᴸ* 'my foot', *hùʔᴹ* 'deep', *iú:iᴹ* 'red (animate)', *ʔę́:iʔᴹ* 'inside'.

In the speech of some older Chinantec people, /n/ occurs following the nuclear vowel /i/ with the same grammatical function as that postnuclear /i/ has after other vowels. *ʔiʔᴸ* ~ *ʔiʔnᴸ* 'my nose', *ŋíⱽᴴ* ~ *ŋínⱽᴴ* 'your face', *tí:* ~ *tí:nᴸ* 'skinny (animate)'.

Controlled syllables ending in postnuclear /ʔ/ tend to be longer in duration than corresponding controlled syllables without postnuclear /ʔ/, so much so that a short checked syllable is perceived to be as long as an unchecked long syllable, as in *guàʔ*^{M} 'church' and *guà:*^{M} 'hand'. Ballistic syllables do not show this characteristic in respect to final glottal. As mentioned, syllables with ballistic stress are shortened. It should be noted, however, that final /ʔ/ on a ballistic syllable does apparently prevent the decrease in loudness typical of ballistic syllables. *ziá:*^{H} 'lake, pool', *ziá:ʔ*^{H} 'other'.

5. Tone

A stressed syllable may carry any of four single tones or one of two tone sequences. Single tones are low, mid, high, and very high—/$^{L\ M\ H\ VH}$/, respectively. The Chinantec people refer to the higher tones as thin and the lower ones as low. *ŋì*^{L} 'my face', *mè:*^{L} 'egg', *ŋié*^{L} 'neither', *vị́:*^{L} 'dish'; *nì̀*^{M} 'three', *hmà:*^{M} 'grass mat', *ŋiá*^{M} 'five', *iụ́:*^{M} 'red'; *ŋiì*^{H} 'smoke', *mè:*^{H} 'flea', *ŋiú*^{H} 'house', *kụ́:*^{H} 'tail'; *iù*^{VH} 'agouti', *mì̀:*^{VH} 'lump', *ŋií*^{VH} 'axe', *vị́:*^{VH} 'oven'.

The tone sequences are a very shallow low-mid rising tone /^{LM}/ and a pronouncedly more steep low-high rising tone /^{LH}/. These rising sequences occur only on controlled stressed syllables. *mì̀*^{LM} 'medicine', *mì̀:*^{LM} 'new', *ŋiì*^{LH} 'wake up!', *ŋiì:*^{LH} 'rope'.

5.1. Tone sandhi. There is one important rule of automatic tone sandhi. High tone /^{H}/ is replaced by very high tone /^{VH}/ in a long or short nonballistic (i.e., controlled or unstressed) syllable whether alone or in the sequence /^{LH}/ when followed by /$^{L\ LH}$/ in any syllable or by /^{H}/ in a ballistic syllable.

(4)	*bà*^{H} (affirmative)	→	*bà*^{VH} *ziú*^{L}	'good (affirmative)'
	hò:i^{LH} 'look at (it)!'	→	*hò:i*^{LVH} *gù:*^{LH}	'Look at the owl!'
	hmè:^{H} 'make (it)!'	→	*hmè:*^{VH} *guá:*^{H}	'Make a box!'

These facts are presented formally in (5) as Rule 1:

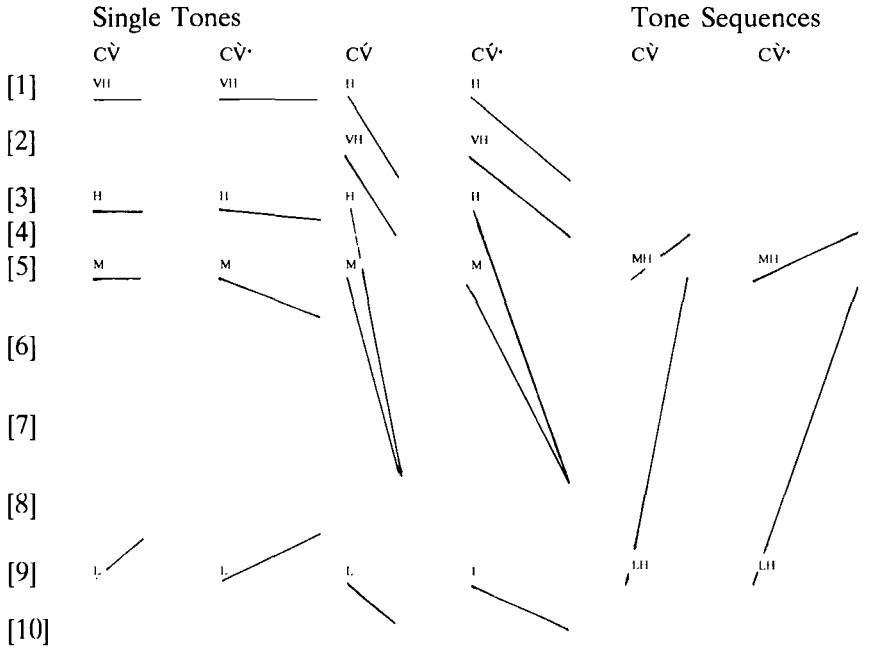
(5) Rule 1.

$$\text{H} \rightarrow \text{VH} \;/\; \begin{bmatrix} (\text{L})\_\_\_\_ \\ -\text{ballistic} \\ \text{vowel} \end{bmatrix} + \left\{ \begin{matrix} \begin{bmatrix} \text{H} \\ +\text{ballistic} \\ \text{vowel} \end{bmatrix} \\ \begin{bmatrix} \text{L(H)} \\ \text{vowel} \end{bmatrix} \end{matrix} \right\}$$

5.2. Tone variants. In order to describe tone variants, each level variant from high to low is assigned a number on a scale of 1 to 10. A gliding variant is assigned two numbers on this same scale to indicate the levels at which it begins and ends. Ten levels are sufficient to distinguish all Lealao tone variants, but the intervals between these phonetic levels are not equal. The interval between levels 5 and 6, for example, is greater than the interval between levels 4 and 5. The details of tone variants discussed below are presented schematically in Figure 1.

Very high tone /^{VH}/ has a level variant [^{1}], the highest of all tone variants, in both long and short controlled syllables. *fì*^{VH} [fì^{1}] 'road', *mì̤:*^{VH} [mì̤:^{1}] 'lump'. In a long or short ballistic syllable, tone /^{VH}/ has a down-gliding variant [^{24}]. *lí*^{VH} [lí^{24}] 'flower'.

Figure 1. Lealao Chinantec Tone Variants



High tone /H/ has a level variant [3] in a short controlled syllable. *diàH* [dià3] 'sir'. In a long controlled syllable, however, it has a slight down-gliding variant from [3]. *kù:H* [kù:34] 'money'.

High tone /H/ presents a problem for analysis in ballistic syllables. In a wide variety of contexts it is realized as a sharp downglide [37]. *ŋiúH* [ñu̱37] 'house', *zá:H* [dzá:37] 'straight'. After a controlled syllable with a basic or derived high tone (by Rule 1 above), however, it is realized as a higher and less sharp downglide [13]. *sïïH ŋiúH* [sï̌1 ñu̱13] 'Is it a house?', *iù:ʔVH hní:H* [yù:ʔ1 Nnį̀:13] 'up on the cloud'.

These facts are presented in (6) as Rule 2:

(6) Rule 2. $/H/ \rightarrow \begin{cases} [13] \\ [37] \end{cases} / \begin{bmatrix} VH \\ \text{controlled} \\ \text{vowel} \end{bmatrix} \begin{bmatrix} \_\_\_\_ \\ \text{ballistic} \\ \text{vowel} \end{bmatrix}$

This presents a curious situation in which the variants [13] and [37] of high tone /H/ flank the variant [24] of very-high tone /VH/. An alternative approach might analyze the sequences [13] and [24] as /VH/ and /H/, respectively, following a controlled high tone, and sequences [24] and [37] as /VH/ and /H/, respectively, in other contexts. Taking these latter contexts as unmarked, the tones occurring in them would be considered basic tones. The tones would then be morphophonemically reversed (flip-flop) in the marked context of Rule 2.

It is not clear what advantage either of the analyses has over the other. There is, of course, already one rule in which an underlying mid tone becomes high; but since a ballistic high is in all contexts realized at approximately the same relative height (in the first analysis), it has seemed arbitrary to consider it now very-high tone and now high tone.

Mid tone /M/ has a level variant in a short controlled syllable. *làM* [là5] 'here'. In a long controlled syllable, mid tone /M/ (like high tone /H/) has a gliding variant [56]. *rà:M* [ra:56] 'tobacco. In short or long ballistic syllables, tone /M/ is a downglide [57]. *rá:M* [rá:57] 'sweet'.

Low tone /L/ has a shallow rising variant [98] in short and long controlled syllables. *hą̀L* [hą̀98] 'foam'. The vowel is faintly laryngealized when the syllable is short; but in a long syllable, the laryngealization is more pronounced, some speakers making a full glottal closure and rearticulation of the vowel. *mè:L* [mę̀9ʔę̀8]. In short or long ballistic syllables, low tone /L/ is a downglide [9-10] reaching the lowest point of the ten-point scale. *tú̱L* [tú̱9-10] 'two', *hmá:L* [Mmą́:9-10] 'root'.

The low-mid sequence /^{LM}/ is a very slight upward glide [^{54}]. It is only found in short and long controlled syllables. *mï̀^{LM}* [mï̀^{54}] 'medicine', *mï:^{LM}* [mï̀:^{54}] 'new'.

The low-high tone sequence /^{LH}/ is a pronounced upglide [^{95}]. Like low-mid, low-high only occurs in controlled syllables. As in the case of low tone, the low-high sequence is laryngealized in long syllables, but this laryngealization has not been observed with low-high in short syllables. With both low and low-high, the peak of laryngealization occurs early in long syllables when not closed by glottal; but, when a final glottal is present, the peak of laryngealization coincides with the final glottal. *ŋiì^{LH}* [ñì^{95}] 'wake up!', *šę̀iʔ^{LH}* [šę̀iʔ^{95}] 'grab it!', *là:^{LH}* [là^{9}ʔa^{5}] 'mule', *šù:ʔ^{LH}* [šù:ʔ^{95}] 'edge'.

Any single tone may occur in an unstressed pretonic or posttonic syllable, but not tone sequences. The relative pitch level of each of the tones in unstressed syllables is comparable to that observed in corresponding stressed syllables. *mï^{VH}pìʔ^{H}* 'child', *ʔi^{H}kuè:ʔ^{LH}aʔ^{VH}* 'we (excl) will leave it', *ʔi^{H}hmè:^{H}a^{H}* 'we will do it', *hą^{M}ní^{L}* 'now', *ʔi^{L}hní^{L}u^{M}* 'you will be locked up', *hŋiú:^{L}a^{L}* 'I am hairy'.

Although a posttonic syllable is not stressed, it may be lexically marked for ballistic stress, thereby providing context for the application of tone sandhi Rule 1. The difference between the two person markers *-á^{H}* (first singular) and *-a^{H}* (first plural inclusive) is that although they themselves are both pronounced without stress, the first triggers a tone change in the preceding stressed syllable when the conditions of Rule 1 are met, while the second does not. In the first example that follows, both Rule 1 and Rule 2 apply. *ʔi^{H}kuè:ʔ^{LH}á^{H}* → *ʔi^{H}kuè:ʔ^{LVH}á^{H}* [ʔi3kuè:ʔ^{91}a^{13}] 'I will leave it', *ʔi^{H}kuè:ʔ^{LH}a^{H}* [ʔi^{3}kuè:ʔ^{95}a^{3}] 'we (incl) will leave it'.

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